Abstract of the Disclosure

A non-contact temperature measuring apparatus is provided with spherical semiconductors mounted on a measurement object and a data collector disposed out of contact with the measurement object. Each spherical semiconductor has an electronic circuit which is operable using internal power created from electromagnetic energy supplied from the data collector, to thereby obtain temperature information. The data collector contactlessly determines a temperature of or a temperature distribution across the measurement object based on pieces of temperature information transmitted from the spherical semiconductors specified by pieces of identification information sequentially transmitted from the data collector.